

**METHOD AND APPARATUS FOR TWO-PORT ALLPASS COMPENSATION  
OF POLARIZATION MODE DISPERSION**

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**ABSTRACT**

A method and apparatus are disclosed for compensating for polarization mode dispersion using cascaded all-pass filters and directional couplers. The disclosed PMD compensator adjusts the coefficients of an adaptive filter structure involving all-pass filters and directional couplers based on a minimized cost function. In one implementation, a stochastic gradient algorithm, also referred to as the least mean square algorithm, is employed to sequentially reduce the value of the cost function by the method of steepest descent. In one another implementation, convergence is improved by employing a Newton algorithm that uses second derivatives to accelerate convergence.

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